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ABSTRACT

To express that a degree of one event is conditioned by (or paralleled by) a degree of another, the "the...the..." construction with a comparative after each "the" is used. Examples include sentences such as: (1) the more dangerous mountains are to climb, the more challenging they are; (2) the more often a man has been in prison, the more likely he is to return there; (3) the harder plastic models are to build, the more challenging they are. The comparative clause construction in English is notorious for its syntactic complexity. What is called in this paper "the shorter, the better" construction exhibits ambiguities and puzzles of great interest to the theory of grammar in general and comparative constructions in particular. The purpose of this paper is to provide an analysis of the syntactic structure of comparatives of proportion within the framework of transformational grammar. (Author/CLK)

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A TRANSFORMATIONAL APPROACH TO THE STUDY OF COMPARATIVE OF PROPORTION

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0. The purpose of this paper is to provide three new transformational rules required for the derivations of sentences such as (1a.b.c), which are called comparative of proportion.

(1)a. The older a man gets, the less exercise he takes.

b. I shall be the better pleased the oftener you come.

c. Goals are more desirable the harder they are to achieve.

Before proceeding with the body of the article, a word on the assumption which I employ in this article is necessary. Concerning the syntax of the comparative clause construction, I follow Bresnans' analysis.

1. Let us consider sentences (2a.b.c).

(2)a. Girls are the$_{(1)}$more attractive to me the harder they are to catch.

b. The harder girls are to catch, the$_{(1)}$more attractive they are to me.

c. Girls are more attractive to me the harder they are to catch.

Three sentences (2a.b.c) have different surface structures. However, note that sentences (2a.b.c) are synonymous. They contain almost the same lexical items,[1] so their synonymy must be due to grammatical construction, not to lexical synonyms. They also share cooccurrence restrictions. These facts suggest that these sentences must be derived from a common underlying structure.

The underlying structure of sentences (2a.b.c) must be like (3).

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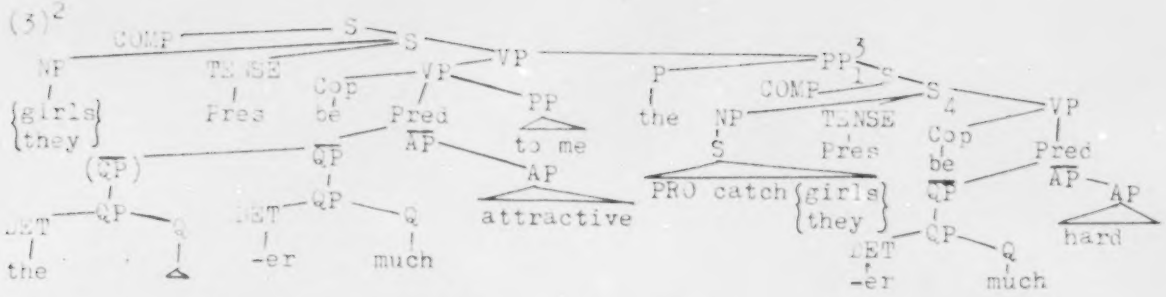
(3)[2]



(Every tree is described roughly in this paper.)

The$_{(1)}$'s, which are called demonstrative adverbs, originate in the category DET which is dominated by QP——a quantifierlike structure dominating such Q's as much, many, few. This category QP is dominated by $\overline{QP}$——adverbial or partitive. Namely, the$_{(1)}$'s originate in the category DET of the phrase structure rules (4) proposed by Bresnan (1973):[4]

(4)a. $\overline{QP}$——— ($\overline{QP}$) QP

b. QP——— (DET) Q

There is some evidence for the claim that the$_{(1)}$'s originate in the category DET of the phrase structure rule (4b). First, the$_{(1)}$'s have the grammatical function of modifying adjectives, nouns and adverbs. Second, this proposal explains the impossibility of *as[5] the, *too the, *that the and *so the. Third, this proposal explains the impossibility of *any[6] the, *no the.

As you notice, I consider that the$_{(1)}$'s are subcategorized for a null Q. There is syntactic evidence for this proposal. This proposal explains the impossibility of *the much, *the many and *the few.

I claim that the underlined clauses in (2) have an underlying structure like (3). There is compelling syntactic evidence for this claim. Consider the sentences in (5).

(5)a. Girls are (the) more attractive to me $\underbrace{\text{the harder they are to catch}}_{X}$.
Y

b. John left town $\underbrace{\text{after he robbed the bank}}_{X}$.
Y

c. She was intelligent $\underbrace{\text{before he married her}}_{X}$.
Y

d. John proved that the earth is round when he was fifteen.
Y Y

The grammatical relation between X and Y of each sentence in (5) is the same. And the in (5a) and after, when and before in (5b.c.d) have the same grammatical function.

Next, let us consider sentence (2b), which I will repeat as (6a), and sentences in (6b.c.d).

(6)a. The harder girls are to catch, the more attractive they are to me.

b. Before he married her, she was intelligent.

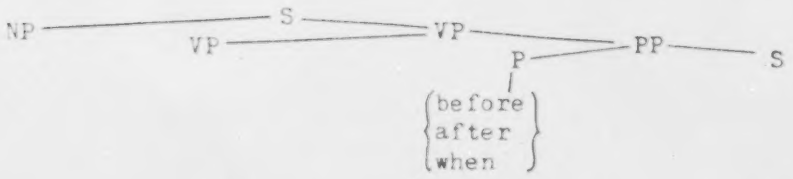
c. After John robbed the bank, he left town.

d. When John was fifteen, he proved that the earth is round.

As sentences in (6) show, all of the underlined clauses X of (5) can be preposed.

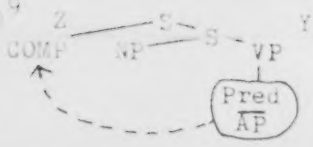
The underlined clauses X of sentences (5b.c.d) can be considered to have the deep structure configuration (7) as Emonds (1970) and Kuno (1973) show.[7]

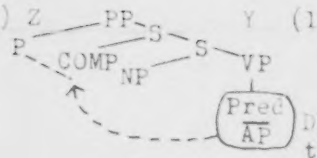
(7)

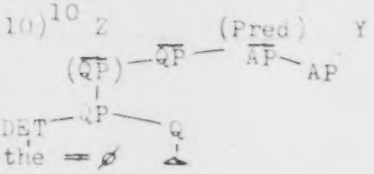


Consequently, if we consider that the clause the harder girls (they) are to catch has a deep structure like (3), both the fact that the grammatical relation between X and Y of each sentence in (5) is the same and the fact that the in (5a) and after, when and before in (5b.c.d) have the same grammatical function can be accounted for in a natural way. Also, if we consider the clause the harder girls (they) are to catch to have a deep structure like (3), there is no need to set up a new transformational rule in order to prepose the underlined clause X of (5a). The clause can be preposed by the same rule that preposes the underlined clauses X in (5b.c.d), namely Adverb-preposing which applies to PP.

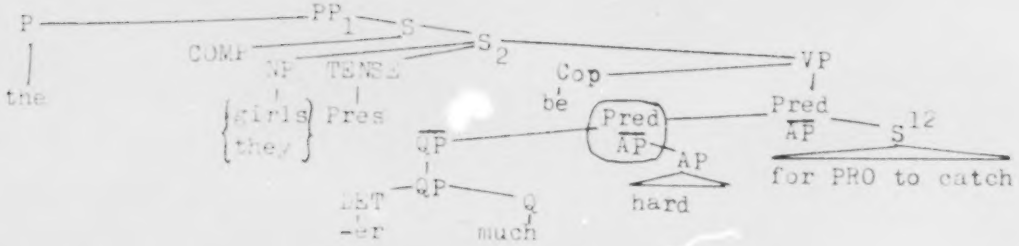
2. We have just observed that (3) is the underlying structure of sentences (2). In order to derive sentences (2) from underlying structure (3), three new rules are essential in addition to rules such as Tough-movement, adverb-preposing and comparative formation.[8] These three new transformational rules can be represented informally by (8), (9) and (10).

(8)[9] 

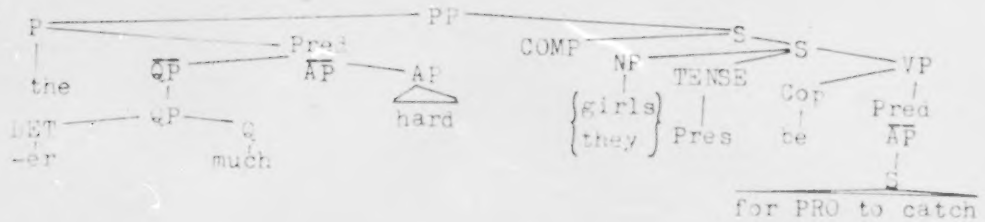
(9) 

(10)[10] 

Let us examine how these new transformational rules (8), (9) and (10) work in the derivations of sentences in (2). Consider first the sentence (2a). After the application of Complementizer Placement and Tough-movement[11] to (3), the internal structure of S_4 dominated by PP_1 will be changed to (11).

(11) 

At this stage, a new transformational rule (9) applies to the encircled $\overline{AP}$ of (11).[13] Consequently, the internal structure of S_2 dominated by PP_1 in (11) will be changed to (12).

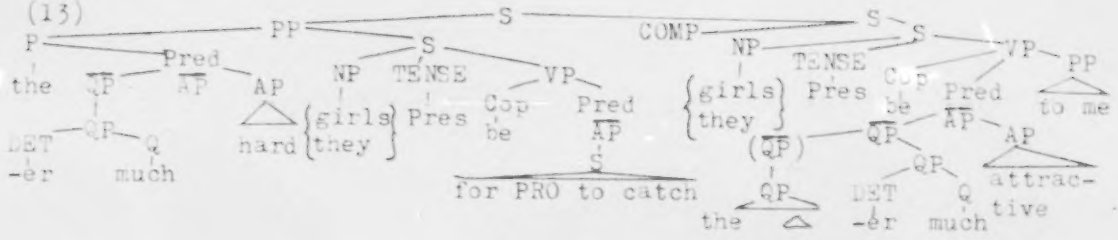
(12) 

After the application of rules such as Pronominalization, comparative formation, and other rules, sentence (2a) will be derived. If Complementizer Placement, Tough-movement, rule (9), rule (10) and other rules apply to the

underlying structure (3), sentence (2c) will be derived.

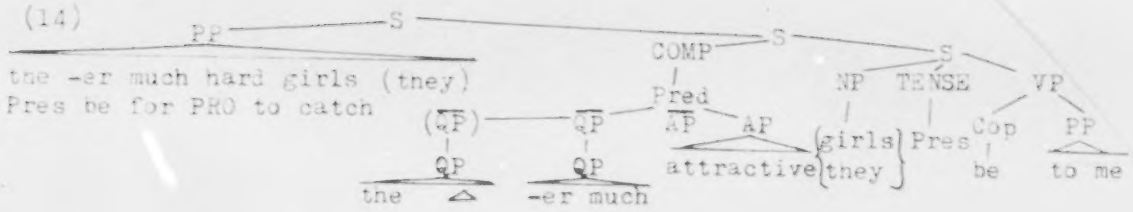
Finally, consider sentence (2b). Complementizer Placement, Tough-movement, rule (9) and Adverb-preposing apply to (3). Consequently, derived structure (13) will be yielded.

(13)



At this stage, a new transformational rule (8) applies to (13). Consequently, structure (14) will be derived.

(14)



After the application of other rules, sentence (2b) will be generated.

It might be thought that setting up two rules (8) and (9) in order to derive sentences (2) is redundant. They move the same constituent $\overline{\text{Pred}}$ to the left of the subject and are different only in that rule (8) inserts the constituent into COMP position and rule (9) adjoins the constituent to P. However, there is compelling syntactic evidence for setting up both (8) and (9).

(15) The more that one has, the more one wants.

The more that was known about the incident, the more indignant people became.

The air became the colder the highter that we climbed.

As sentences (15) show, that can be inserted into COMP position in subordinate clauses, but that can not be inserted into COMP position in main clauses as sentences (16) show.

(16) *The more one has, the more that one wants.

*The air that became the colder the higher we climbed.

Setting up both (8) and (9) gives a natural explanation to the above phenomenon. Rule (8) moves $\overline{\text{AP}}^{\text{Pred}}$ to the COMP position. Consequently, there is no COMP position into which <u>that</u> can be inserted after the application of rule (8). This explains the ungrammaticality of sentences in (16). Rule (9) adjoins $\overline{\text{AP}}^{\text{Pred}}$ to P. Thus, there is an empty COMP position into which <u>that</u> can be inserted after the application of rule (9). This explains the fact that sentences in (15) are grammatical.

5. We have just gotten a rough idea of the three new rules which are needed in order to derive the sentences in (2) from the underlying structure (3). And also we have examined how these rules work by considering the derivations of sentences in (2). Here, we will examine the three new rules and try to formulate them by looking at some examples of comparative of proportion. Consider the sentences in (17), (18), (19), (20), (21), (22), (23) and (24).

(17) The oftener you come, the better I shall be pleased.

The older a man gets, the more effective exercise he must take.

(18) The more money he makes, the more he wants.

I shall be the little pleased the oftener you go.

(19) The easier clothing is to wash, the more useful it is.

Clothing is more useful the easier it is to wash.

*The more useful clothing is, the easier it is to wash.

*If you start now, the sooner you will be back.

If you start now, you will be back the sooner.

(20) *People are more fascinating to me if more mysterious they seem.

People are more fascinating to me the more mysterious they seem.

(21) *The mysterious people seem, the more fascinating they are to me.

*People are (the) more fascinating to me the mysterious they seem.

(22) *The more mysterious people seem, the fascinating they are to me.

*The more mysterious people seem, more fascinating they are to me.

(23) *People are more fascinating to me, the they seem more mysterious.

*The easier clothing is to wash, it is (the) more useful.

(24) Government policies arouse (the) less interest the further they are from the concerns of the local community.

The air became (the) colder, the higher we climbed.

The stone gets (the) harder, the longer it is exposed to the weather.

Sentences in (17) show that rule (8) can insert such constituents as $\overline{\text{NP}}^{(\text{Pred})}$[14] and $\overline{\text{Adv}}$[15], as well as $\overline{\text{AP}}^{\text{Pred}}$, into the COMP position. Sentences in (18) show that rule (9) can adjoin not only $\overline{\text{AP}}^{\text{Pred}}$, but also constituents such as $\overline{\text{NP}}^{(\text{Pred})}$ and $\overline{\text{Adv}}$ to P. Sentences in (19) show that rule (8) can insert such constituents as $\overline{\text{AP}}^{\text{Pred}}$, $\overline{\text{NP}}^{(\text{Pred})}$ and $\overline{\text{Adv}}$ into the COMP position only if PP which dominates $(\text{the})_P$ is preposed by Adverb-preposing, a rule which applies to PP. Sentences in (20) show that rule (9) can apply only under the condition that P to which $\overline{\text{AP}}^{\text{Pred}}$, $\overline{\text{NP}}^{(\text{Pred})}$ and $\overline{\text{Adv}}$ will be adjoined dominates the. Sentences in (21) show that rule (9) can move $\overline{\text{AP}}^{\text{Pred}}$, $\overline{\text{NP}}^{(\text{Pred})}$ and $\overline{\text{Adv}}$ only if these constituents dominate -er much. Sentences in (22) show that rule (8) can move $\overline{\text{AP}}^{\text{Pred}}$, $\overline{\text{NP}}^{(\text{Pred})}$ and $\overline{\text{Adv}}$ only if these constituents dominate the and -er much. Both (8) and (9) must be obligatory rules as sentences in (23) show. Rule (10) can delete not only the dominated by $\overline{\text{AP}}^{\text{Pred}}$ but also the dominated by $\overline{\text{NP}}^{(\text{Pred})}$ and $\overline{\text{Adv}}$ optionally as sentences in (24) show.

In the previous discussions concerning the constituents which can be moved by rules (8) and (9), I claim that these rules can move $\overline{\text{AP}}^{\text{Pred}}$. This means that $\overline{\text{AP}}$ can not be moved by these new rules as noted in Footnotes

(9). There is compelling syntactic evidence for this claim. Consider the sentences in (25) and (26).

(25)a. The more reliable grades you have, the more accurate they will be.

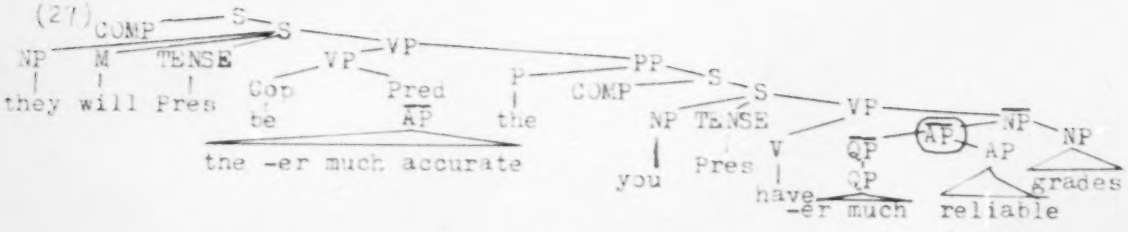
b. *The more reliable you have grades, the more accurate they will be.

(26)a. The older a man gets the more appropriate exercise he must take.

b. *The older a man gets, the more appropriate he must take exercise.

(25b) is ungrammatical. The underlying structure of sentences (25a.b) is (27).

(27)



If we consider that rule (9) can move $\overline{AP}$, this rule will move the encircled constituent $\overline{AP}$. Consequently, ungrammatical sentence (25b) will be generated. Also, if we consider that rule (8) can move $\overline{AP}$, ungrammatical sentence (26b) will be generated.

Rule (9) can be formulated as follows:

(28) SD: X $\langle_{PP}$ $\langle_{P}$ the $\rangle$ $\langle_{S}$ COMP $\langle_{S}$ NP W $\left\langle_{VP}\right.$ $\left\langle\begin{matrix}\text{Pred}\\ \overline{AP}\\ \overline{NP}\\ \overline{Adv}\end{matrix}\right\rangle$ $\left\langle\begin{matrix}\text{(Pred)}\\ \overline{AP}\\ \overline{NP}\\ \overline{Adv}\end{matrix}\right\rangle$ Z $\left.\right\rangle$ U $\rangle\rangle\rangle$ Y

SC: 1 2 3 4 5 6 7 8 9 $\longrightarrow$

1 2+6 3 4 5 $\emptyset$ 7 8 9

═══obligatory

According to the above arguments concerning the conditions under which rule (9) can apply, another condition that the constituents of the sixth item of (28) must dominate a string -er much seems to be essential in order to block ungrammatical sentences in (21). However, there is no need to at-

tach this condition to the rule. It seems to me that this problem should be treated within the system of cooccurence restrictions.[16]

Rule (8) can be formulated as follows:

(29) SD: X $\left\langle_{PP}\left\langle_{P}\text{ the}\right\rangle\text{ U}\right\rangle\left\langle_{S}\text{ COMP}\left\langle_{S}\text{ NP Z}\left\langle_{VP}\left\{\begin{matrix}\text{Pred}\\\overline{AP}\\\end{matrix}\right.\right.\right.\right.$ $\left.\left.\left.\left\{\begin{matrix}\text{(Pred)}\\\overline{NP}\\\overline{Adv}\end{matrix}\right.\right.\right.\right.$ W Y$\left.\left.\right\rangle\right\rangle$ Q

SC: 1 2 3 4 5 6 7 8 9 10⟶

1 2 3 7 5 6 ∅ 8 9 10

═══obligatory

In order to block ungrammatical sentences in (22), another condition that the constituents which will be moved by rule (8) must dominate a demonstrative adverb the and a string -er much may be necessary as we observed in the previous discussion. However, this problem should be treated within the system of cooccurence restrictions.[17] Thus, there is no need to attach this condition to rule (8).

Rule (10) may be formulated as follows:

(30)[18] SD: X $\left\langle_{QP}\left\langle_{DET}\right.\right.$ the$\left.\right\rangle$ W$\left.\right\rangle$ Y

SC: 1 2 3 4⟶

1 ∅ 3 4

═══optional

We call rule (9) and (8) The Attraction 1 and The Attraction 11, respectively. Rule (10) may be called The Deletion rule.

4. In summary, we have stated that The Attraction 1, The Attraction 11, and The Deletion are required for the derivations of sentences such as (1a.b.c), which are called comparative of proportion.

FOOTNOTES

1. I consider that, in the case of sentence (2c), the is deleted by a transformational rule.

2. Concerning $\overline{AP}$, $\overline{QP}$ and QP, see Bresnan (1973, p.275-345)

3. Following Emonds (1974), I consider PP to dominate adverbial clauses.

4. Bresnan (1973, p.291).

5. As, too, that and so are instances of the category DET of the phrase structure rule (4b). See Bresnan (1973, p.277)

6. Any and no are instances of the category DET of the phrase structure rule (4b). See Bresnan (1973)

7. For further information, see Kuno (1973, p.366) and Emonds (1970, p. 143-144).

8. See Bresnan (1973, p.280).

9. This rule doesn't apply to $\overline{AP}$. This is the same with rule (9).
(Pred)

10. $\overline{AP}$ means that this rule can delete the dominated by $\overline{AP}^{Pred}$ and the dominated by $\overline{AP}$.

11. The structural description for Tough-movement is

$$\left(_S \left[_{NP} \left[_S \quad V \quad X \quad NP \quad Y \right] \right] \quad Adj \quad for \quad NP \right)$$

The noun phrase in the embedded sentence is made the subject of the adjective, with the rest of the embedded sentence being extraposed to the right of the matrix predicate. See Berman (1973, p.37). I consider the second operation which extraposes the rest of the embedded sentence to be a Chomsky adjunction. This claim can be supported by the grammatical sentence in Footnotes 12.

12. The constituent for PRO to catch extraposed by the second operation of Tough-movement in Footnotes 11 must be dominated by Pred. This claim is supported by the fact that the following sentences are $\overline{AP}$ grammatical.

The more difficult to read books are, the more challenging they are.
The more difficult books are to read, the more challenging they are.

13. Rule (9) can apply to the largest $\overline{AP}^{Pred}$. This is clear from the fact that sentences in Footnotes 12 are grammatical.

14. This means that both $\overline{NP}^{Pred}$ and $\overline{VP}$ can be moved.

15. I consider that category Adv is necessary. Adv is an adverbial phrase.

16. The, called a relative adverb, always requires such constituents as $\overline{AP}^{Pred}$, $\overline{Adv}$ and $\overline{VP}^{(Pred)}$ to dominate a string -er much.

17. The, called a relative adverb, requires not only a string -er much but also a demonstrative adverb the as the following sentences show.

Clothing is the more useful the easier it is to wash.
*Clothing is more useful the easier it is to wash. (This sentence is good if we consider that the is deleted by rule (10).)

Also, the, called a demonstrative adverb, requires an -er much as the following sentence shows.

*Goals are the desirable the harder they are to achieve.

18. Rule (10) must be ordered after rule (8) as the following ungrammati-

cal sentence shows.

*The longer stone is exposed to the weather, harder it goes.

Rules (28), (29) and (30) may be simplified.

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